

Engineering Analysis Procedures for Cargo Tanks

The Federal Motor Carrier Safety Administration has developed a comprehensive, yet streamlined approach to address violations discovered during the course of engineering analysis of cargo tank designs.

Policy: Engineering analysis should be conducted using the procedures set forth in Illustration 5-3 of this Chapter - "Procedures for Engineers Assisting a Cargo Tank Manufacturer Review." The FHWA engineers that perform the analysis should formulate conclusions about the adequacy of the cargo tank design and whether violations of the regulations exist. When enforcement is anticipated or serious violations are discovered, an engineer that has successfully completed two prior reviews will evaluate and confirm the analysis.

Stated below are a policy and program to achieve the noted goals.

Engineers Review: The engineers performing the analysis should have been trained on using FHWA's "Guidelines for Structural Evaluation of Cargo Tanks." In addition engineers will require access to a copy of the ASME Code (version in effect at time of manufacture) and other technical publications referenced by Appendix G of the Code. These can be obtained from the ASME, or are sometimes available through a university library.

- a. If **structural** violations are discovered, the analysis will be reviewed by another engineer for concurrence. If the results of the analysis are confirmed, it will be forwarded to the manufacturer for comment, and to provide additional information and/or assumptions to clarify the design deficiency.
- b. If information provided by the manufacturer does not eliminate or change the conclusions, an enforcement action will be developed and forwarded to MC-ECH for concurrence with legal and RSPA.
- c. If the manufacturer provides engineering analysis conducted by a method other than FHWA's "Guidelines for Structural Evaluation of Cargo Tanks" showing their design to be in compliance with the regulations, FHWA will contract to have computerized Finite Element Analysis (FEA) conducted to corroborate FHWA's analysis.
- d. Enforcement will not be pursued in cases where the manufacturer does not agree with FHWA's analysis unless FHWA has documentable evidence that a violation exists in the form of:
 - i. Clear deficiencies in the manufacturer's analysis, or

- ii. Independent computerized analysis corroborating FHWA's analysis.